

Network Access Policy (NAP) National Grid Electricity Transmission

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1. EXECUTIVE SUMMARY

This document, National Grid Electricity Transmission's Network Access Policy (NAP) is designed to facilitate efficient performance and effective liaison between the System Operator (SO) and Transmission Owner (TO) in relation to the planning, management and operation of the National Electricity Transmission System (NETS) for the benefit of consumers. The requirement for National Grid Electricity Transmission "NGET" to put in place a NAP is detailed in the Transmission Licence (special licence condition 2J).

The approach that National Grid's balancing services and transmission owner activities will follow to achieve these aims is set out in this document. Specifically it sets out the method National Grid will follow to make visible the basis for decision making between the NGET balancing services and transmission owner to confirm the baseline plan and manage changes to that plan to meet evolving system needs. This will include cost transparency of transmission owner activities to enable NGET balancing services to make informed decisions in the interests of consumers and network users.

This policy includes the actions that National Grid will undertake in both the short-term and long-term to plan and manage network access. The long-term framework looks one, to a minimum of eight years ahead (more where required) to help schedule works, avoid duplication of effort, work with connected users and ensure that connection dates for new customers can be achieved. The short-term framework considers works in the current year, looking at how they are scheduled and managed, including how system faults and other real-time events can affect the safety, reliability and security of the network.

2. REQUIREMENTS FOR THE NETWORK ACCESS POLICY

The licence condition 2J places on NGET a number of essential requirements for inclusion, namely:

- a) Details of the actions that NGET will take to coordinate internally and/or with other Transmission Owners (as appropriate) to ensure that planned network outage arrangements are agreed with due consideration of the long-term outcomes for consumers and network users;
- b) Details of the actions that NGET will take for the purposes of responding to and managing unplanned network outages with a view to minimising their contribution to network constraints, subject to the need to ensure the safe, secure operation of the NETS as a whole or any part of it;

- c) Details of the types of circumstances that are likely to require an alternative approach to that set out in relation to the above two paragraphs; and
- d) A description of NGET's internal communication and coordination strategy for interacting in respect of matters relating to the NAP.

3. NGET'S PRINCIPLES FOR MEETING POLICY REQUIREMENTS

In meeting the requirements of this policy, NGET will seek to ensure that its activities associated with the planning, operation, maintenance and development of the transmission network:

- Are complementary and work together to deliver safe, secure and economic energy to consumers;
- Take due consideration of the long-term outcomes for consumers and network users;
- Utilise an approach which makes the trade-off between transmission investment and operational costs more transparent; and
- Recognise that the timeframe in which the policy is applied directly impacts on spread of cost: benefit forecasting.

In doing so, NGET will:

- Clarify what stakeholders can expect from NGET's balancing services and transmission owner activities in terms of the availability of the transmission network, including the planning and management of outages and the risk of over-runs; and
- Help define the principles for a baseline level of service acceptable to both the transmission owner and balancing services activities, including the approach to
- Co-ordination and management.

4. NETWORK ACCESS TIMEFRAMES

The short-term framework focuses on the current year, (being the period being 1 April to 31 March of the following year). It deals with planned work and monitors progress throughout the year, as well as managing real-time issues such as faults and system emergencies. These short-term issues may be due to disruption and/or damage caused by severe weather conditions, asset deterioration or third-party actions.

The long-term framework covers from one to a minimum of eight years ahead, and concentrates on the scheduling of works and minimising the potential adverse impact on the network. For projects which require system access in two to eight years' time, the scheduling will be on a preliminary basis having considered the broad impact on electricity security of supply when judged against industry standards. As projects advance closer to delivery timescales the detail is firmed up.

5. STEPS TO SATISFY THE NETWORK ACCESS POLICY REQUIREMENTS

Trading off Constraint, Transmission Investment and Operational costs

In its balancing services activity, NGET SO incurs costs when it takes actions to resolve constraints caused by the pattern of electricity generation and consumption. NGET (as NETSO) is exposed to a share of these costs in accordance with the Balancing Services Incentive Scheme, with the balance being paid by consumers.

Constraint costs are affected by the availability of the transmission network. This is, in turn, is affected by the transmission owner activity, for example, taking equipment out of service for maintenance, replacement or refurbishment.

Operational costs (including constraint costs) may be reduced if the duration of these works is shortened or if works are undertaken at times of favourable energy flows (e.g. when a specific power station that would be behind a constraint is also being maintained). NGET's transmission owner activity can also contribute to reducing constraint costs by prioritising actions to sustain asset ratings or to enable increases in ratings where required, either temporarily or permanently. This may result in increased cost to NGET's Transmission Owner activity (e.g. from extended working hours, or movement of resources from other zones). The net result however may be beneficial to the consumer.

NGET will plan and organise outages that minimise the cost to customers whilst meeting our other obligations. We will take into account:

- The cost of implementing works on the transmission network which require a network outage; and
- Potential operational costs on the network (including constraint costs) associated with outages.

5.1 HOW SYSTEM OUTAGES WILL BE MANAGED AND CO-ORDINATED

To facilitate co-ordination of outages across the GB transmission system at an early stage of development, NGET's balancing services activity will chair regular Transmission Outage Planning Forums. These forums will include appropriate representatives from NGET's balancing services and transmission owner activities and other Transmission Owners as required.

Circuit outage windows will be formally agreed by NGET's balancing services activity based on NGET's transmission owner activity and other Transmission Owners and discussed at the Transmission Outage Planning Forums. Circuit outage plans will be formally agreed in line with the short- and long-term outage frameworks and refined at one year ahead, and provide the basis for a 'baseline' delivery cost for actual work (the application and impact of the NAP on the 'baseline' cost is explained later) Reviews at the agreed timescales will be completed.

Due to the network configuration the sequencing and timing of certain outages could create critical outage windows which are agreed many years in advance, helping achieve a consistent long-term view across NGET's balancing services and TO activities.

System outages are prioritised on a case-by-case basis taking into account the consequences of under or late delivery. When prioritising system outages, we will seek to ensure:

1. The safe operation of the system;
2. The timely provision of customer connections and reinforcement of the wider transmission network to minimise transmission costs; and
3. The ongoing availability and reliability of the transmission network.

The transmission outage plan will be made available to the relevant interested parties via the information system 'Transmission Outage Generation Availability' (TOGA) and will be updated regularly to reflect any changes to the plan on an ongoing basis.

NGET's transmission owner activity will ensure focus on the following areas:

- Liaison with NGET's balancing services activity and other interested stakeholders on the programme of circuit and equipment outages and any changes to these outages;
- Defining work programmes which minimise work delivery costs; subsequently amending in light of discussions with balancing services to reconcile with other concurrent outage requests;
- Bundling of outages (where outages for a number of projects on the same circuits may be programmed during the same outage window to minimise the number and duration of outages, and therefore minimise the associated operational costs);
- Ensuring plans are in place to return equipment to service quickly should the need arise (Emergency Return to Service), where a defined period to return the equipment is a prerequisite for approval of the outage. e.g. 24 hours; and
- Providing flexibility, including consideration of an extension of the working week beyond Monday to Friday or beyond basic daytime working hours.

NGET's balancing services activity will ensure focus on:

- Provision of information on the system security and constraint cost impact of the circuit outage plans being developed by NGET's transmission owner activity;
- Highlighting opportunities for extended return to service times on certain circuits, allowing the transmission owner activity to deliver the work in a lower-cost way;
- Identifying circumstances where outages could be taken outside the 'normal' window;
- Identifying where an outage or sequence of outages, if disrupted, would have significant impact on other work activities and/or cost consequences; requesting mitigating actions as appropriate.

5.2 MANAGING OUTAGE OVERRUNS AND DELAYS

A critical component of this will be the level of interaction and timing of permissible information flow between NGET's balancing services activity on the one hand, and NGET's transmission owner activities and the other Transmission Owners on the other.

Managing risks relating to overruns and delays to outages will be addressed through detailed return to service and contingency plans which will accompany all outage requests submitted for approval by NGET's balancing services activity. Once in delivery, work will be appropriately monitored to ensure timely deployment of contingency plans.

Appendix 2 contains the template for recording the application of the Network Access Policy.

5.3 ESTABLISHING A 'BASELINE' DELIVERY COST FOR ACTIVITIES

As mentioned above NGET's transmission owner activity will "bundle" outage requests to minimise the number and duration of outages, and therefore minimise the associated operational costs. However this may give rise to additional costs for delivering the work, as would outage duration availability being less than 'least cost' for delivery of maintenance and development activities. The enhanced service section below indicates the techniques or options which may be deployed in these situations. The 'baseline' work plan will be the work plan developed as of March of the calendar year preceding its delivery (e.g. March 2014 for delivery from April 2015)

The 'baseline' delivery cost would be the cost of delivering the activities without deployment of any of the enhanced services identified or developed in the future.

5.4 ENHANCED SERVICES ABOVE THE BASELINE LEVEL OF SERVICE

There may be opportunities for NGET's transmission owner activity to go beyond the minimum requirements of the NAP which are in the interests of consumers. Where NGET's balancing services activity requires an amendment to an agreed outage window or an agreed outage, NGET's transmission owner activity will consider the following options and make visible associated costs to enable consideration of steps to minimise the associated constraint costs:

- Increasing manpower – additional resource enabling shorter overall outage;
- Temporary increases in circuit loading – increased short-term circuit ratings to reduce constraint costs with (where appropriate) a subsequent low-loading period to minimise asset impact. This may require:
 - Real-time equipment monitoring;
 - Thermal monitoring.
- Permanent increases in circuit rating – normally post-fault. This may require:
 - Meteorological Office Ratings Enhancement;
 - Hotwiring schemes;

- Sag monitors on overhead line conductors.
- Network reconfiguration – changes in network configuration, including temporary bypass schemes and cross-jumpering of overhead line circuits;
- Alternative engineering outage arrangements – outages requiring sub-optimal work procedures and increased costs.
- Reduced Emergency Return to Service times;
- Temporary inter-trip schemes;
- Energy management schemes;
- Advancing investment, or deferring investment if the resultant risks can be managed at a lower cost than the alternative constraint cost; and
- Enhanced supply chain, procurement and resourcing contracts;
- Other innovative techniques such as Live Line Working

Cost visibility will be maintained at a level appropriate to balancing services forecast of the level of any constraint, and its probability of occurrence to enable informed decision making i.e. will not drill down to an inefficient level of detail.

5.5 MONITORING AND REVIEW

This is an ongoing process which will be frequently reviewed through regular meetings between NGET's balancing services activity and Transmission Owners. Wherever the NAP is enacted decisions made will be recorded as part of the process (as detailed in the appendices).

This regular consultation and engagement with stakeholders is a key component of the process.

5.6 COMMUNICATION

Communication between the transmission owner and balancing services activities is critical to meeting the objectives of the Network Access Policy.

This is achieved by having appropriate representation on, or liaison with, the teams which identify, develop and plan the various work activities on the network. This close co-operation continues through to work delivery in current year where any work re-prioritisation similarly seeks to reconcile any immediate actions to complete the work against a detrimental impact on other works, statutory and regulatory obligations.

6. APPENDIX 1 SHORT-TERM AND LONG-TERM OUTAGE PLANNING FRAMEWORK

6.1 SHORT-TERM OUTAGES

The assumption is made that, within the current year, the only changes made to the outage plan are those that are unforeseen by NGET's transmission owner activity such as faults, safety issues, defects that affect plant and equipment ratings, unforeseen project issues and unforeseen maintenance requirements.

The year-ahead plan (year 1) identifies all outages required by NGET's transmission owner activity in the next year which is then agreed with NGET's balancing services activity. If changes are subsequently required to this plan during the current year due to unforeseen issues, a means of prioritising network access is required. This prioritisation will take place in accordance with the Managing outage Overruns and Delays section above.

6.1.1 CHANGE CONTROL PROCESS

In the event that a change to the outage programme is required, NGET's balancing services activity will prepare a Change Control Document with NGET's transmission owner activity. The document will specify the reason for the change to the outage plan and the associated impact on system security and operational costs.

Factors for consideration in the Change Control document include:

From NGET's balancing services activity:

- Potential operational costs, including constraint costs, based on bid and offer prices submitted by potentially-affected generators;
- Potential system security issues based on transmission system availability and generation profile; and
- Alternative options for re-routing power, increasing demand and / or other commercial arrangements for minimising potential constraint costs.

From NGET's transmission owner activity:

- Potential costs arising from delaying the outage, including manpower costs, equipment hire, variation costs and environmental or land access issues;
- Alternative options for redeploying resources, such as bringing forward an alternative outage, compressed or extended working patterns, etc;
- Use of dynamic line ratings on either the affected or adjoining circuits;
- Where demand customers are affected, use of standby or mobile generation to maintain security of supplies; and
- Potential cumulative effect on other projects of rescheduling outages.

The within-year outage plan change control process will provide NGET and its stakeholders clearer visibility of the effect that changes to the outage plan will have on system security, operational costs and transmission owner activity costs.

Where the outage change control process identifies a system security issue, the relevant parties will work together to eliminate the concern.

Where the outage change control process identifies that the costs to the transmission owner activity would significantly exceed the potential operational costs associated with the rescheduled outage, the transmission owner's outage change request shall be agreed.

6.2 LONG-TERM OUTAGES

Apart from plant and equipment failures, capital schemes will be adequately developed and have sufficient information about outage and resource requirements as they enter the year-ahead plan build stage. In addition, a planning framework has been developed to manage outage requests from one to eight years ahead of first site access.

This prioritisation of schemes will take place in accordance with the Managing outage Overruns and Delays Section above.

6.2.1 PLANNING OF WORK

3 to 8 years ahead: High-level view of works

- A six-monthly review of the work required to be carried out on the transmission system will be undertaken. Key boundaries will primarily be assessed based on outage volumes which will then lead to more detailed reviews where major congestion is identified. The remaining outages will not be reviewed routinely unless any specific schemes or outages are agreed between NGET's balancing services activity and its Transmission Owner activity. The process will reflect the fact that schemes and outages will become progressively more certain moving from eight to three years ahead. A primary objective of the 3 to 8 year ahead process will be to ensure a deliverable three year ahead plan, which can progress and be further developed as part of the two year ahead process.

2 years ahead: Assembling outage plan for critical work

- The works generally become progressively firmer, facilitating the formulation of a more detailed programme. Based on the information available in the 3 to 8 year ahead stage, outage requirements for the overall plan are determined at a high level. This stage will identify any delivery "pinch points" and options to overcome them. Critical works with outage placements should be agreed by the end of the 2 year ahead stage. The output of this phase forms the 'baseline' work plan. These will be reviewed on a monthly basis.

Year ahead: Fixed in plan

- At the year ahead stage, the detailed plan build process commences. In this phase, all the capital schemes will have been developed to a sufficient level to provide an accurate assessment of outage requirements. The plan is developed over several

months and will be optimised against the critical requirement that the plan should be deliverable without compromising network security.

6.2.2 COMMITTED CAPITAL SCHEMES

Many capital schemes will have been developed in detail and been committed from two years ahead of first site access, i.e. once they reach the execution phase. NGET's transmission owner activity will submit to NGET's balancing services activity a detailed stage-by-stage outage diagram for consideration and confirmation. Any confirmation of outages at this early stage can only be based on the information known at that time and may be subject to change.

When major projects in the 2 year ahead plan are fixed and backed by signed contracts, NGET's balancing services activity will give these projects priority when the costs incurred by the transmission owner activity in moving the outage would be greater than those to NGET's balancing services activity if the outages were not moved.

7. APPENDIX 2: RECORD OF THE APPLICATION OF THE NETWORK ACCESS POLICY

Transmission Owner(s):



Executive Summary:

Cost Forecast:	£	xxx,xxx,xxx	Sanction Level:	CSG / Band C / Band B / Band A / IRMC
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Cost Exposure:	£	xxx,xxx,xxx	Sanction Authority:	Title
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TO Justification:

"Work content" & "Urgency of Works"

SO Impact:

"Constraint boundary" & "Constraint volumes"

Impact on SO expenditure:

"Overall impact"

Conclusion:

"Proceed with outage" & "Justification"

Outage(s) in the Year Ahead Plan?	Y/N	Covered by Year Ahead limits?	Y/N
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Paper Authors:

Constraint Management	Lead party	(7780 XXXX)
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Cost Assessment	Lead party	(7780 XXXX)
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Background – Transmission Owner: Outage(s) required

TOGA	Circuit	From	To	ERTS

Background – Transmission Owner: Concurrent outage(s)

TOGA	Circuit	From	To	ERTS

Background – Transmission Owner: Work Content

Work content:	What work is the outage to facilitate?
Outage duration:	Which work content drives the outage duration?
Urgency of works:	Why does the work have to be completed now?
Value of works:	What is the financial value of the works to the TO? <i>e.g. stand down costs, penalties for late delivery</i>

Background – Transmission Owner: Mitigation of Operational Risk

Timing / Moving:	Can the TO provide flexibility on the dates required? <i>E.g. to align the outage with a low-wind day.</i> What would the impact be? What TO Change Costs would be involved? <Scotland only>
Daily vs. continuous:	Can to outage be a daily booking? What would the impact be?
Extended hours:	Can the TO utilise extended hours? What would the cost be? <i>e.g. long days, weekend working, overnight working</i>
Bundling of works:	How have the TO sought to bundle work to minimise system access?
ERTS:	What ERTS profile over the outage period? What is driving this? <i>TOGA only indicates "worst case" / maximum</i> What would the impact of a shorter / longer ERTS be? <i>e.g. shorter ERTS => 50% longer duration</i>
Winter ERTS:	Details of the results / relevance of the checks.
Circuit rating:	Can the TO Increase limits by increasing flows. <i>e.g. Rating Enhancement / OCLR / CTM / MORE / Sag monitoring</i>
Network reconfiguration:	Increase limits by changing system topology. <i>e.g. Temporary bypass schemes, cross-jumpering of OHL</i>
Operational Tripping Schemes:	Permanent and/or temporary schemes.
Demand:	Actions taken (or not taken) to ensure security of supply

Background – Transmission Owner: Impact on outage plan

Impact of delaying works (local):	What would be the impact at a site / scheme level? <i>E.g. Asset health, safety, cost incurred at site, project delivery (MEWPs, overtime etc.)</i>
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Impact of delaying works (wider):	How would moving the outage impact upon other works in the area / on the same boundary? <i>E.g. Plan congestion, resourcing, project delivery</i>
Deferral of conflicting outages:	Which other outages (if any) could be deferred (or recalled) to facilitate system access? What would be the impact on those works?

Background – Transmission Owner: System Operator

Minimising Operational Costs: (present & future)	Description of any benefits the work content will deliver <i>e.g. increase transfer, removal of restrictions</i> <i>Take from Network Development Policy justification?</i>
Year Ahead Plan:	Was the outage included in the Year Ahead Plan? Have the dates &/or duration changed? If so, why? Has the work content changed? If so, why?
Risk of over-runs:	What is the probability of the outage completing on time? What is the worst-case duration of any outage overruns? What impact will any over-runs of the outage have on the TO plan?

Background – System Operator:

System Security:

Summary of the faults / overloads being secured. Details of why the SO are (or are not) securing the outage.
e.g. SQSS minimum requirement, safety

Constraint Limits:

A summary of the constraint boundary(s) and relevant limit(s) caused by the issue is as follows.

<Boundary name>:

Period	0 I/T Limit [MW]	1 I/T limit [MW]	2 I/T limit [MW]	Reduction [MW]	Comment

<Boundary name>:

Period	0 I/T Limit [MW]	1 I/T limit [MW]	2 I/T limit [MW]	Reduction [MW]	Comment

Summary of the scenario / assumptions made in calculation the constraint limits.
e.g. High wind, low demand, imports / exports

Generation outages:

Is the outage currently aligned with generation outages? { Yes | No }

<p>Constraint volumes:</p> <p>Details of the scenarios assumed and consequentially the constraint volume caused by the outage. <i>e.g. study assumptions, forecast generation running patterns</i></p>
<p>Impact of over-runs:</p> <p>What impact would an over-run of the outage have? <i>(Based on the expected transmission and generation outage patterns.)</i></p>

Options & Mitigating Actions: Outage		
Timing (Moving):	Delay / bring forwards the outage. What is the impact of this on the wider plan?	Y/N
Duration:	Can the TO utilise extended hours? <i>e.g. long days, weekend working, overnight working</i>	Y/N
Work content:	Reduce to minimum to avoid risk if likely to cost. Expand if there is the opportunity to accommodate works.	Y/N
ERTS profile:	Reduced risk.	Y/N
Recall:	Avoid excessive expenditure under worst case outturn scenarios.	Y/N
Nesting outages:	Transmission &/or generation, to avoid expenditure in isolation for the issue.	Y/N
Defer conflicting outages:	Deferral of other outages / schemes to facilitate.	Y/N

Options & Mitigating Actions: System		
Running Arrangements:	Change flows (pre-or-post fault).	Y/N
Open standby:	Change flows (pre-fault).	Y/N
Circuit rating:	<i>e.g. Rating Enhancement / OCLR / MORE</i>	Y/N
Network reconfiguration:	<i>e.g. Temporary bypass schemes, cross-jumpering of OHL</i>	Y/N
Bilateral Connection Agreement:	Restrict generation according to access rights.	Y/N
Operational Tripping Schemes:	Permanent and/or temporary schemes.	Y/N
CAP048 Disconnection:	Disconnection of generation from the system. <i>NB: connection assets <u>must</u> be unavailable</i>	Y/N

Options & Mitigating Actions: Market		
Balancing Mechanism:	Manage volatility in the BM.	Y/N
Trade:	Save against BM prices?	Y/N
Contract:	Manage large, certain volumes.	Y/N

Commercial Intertrips: Arm commercial intertrips.	Y/N
Commercial Special Action: Fast de-loads, Hand-trips etc.	Y/N

Cost Forecast:					
Cost Forecast:	£	xxx,xxx,xxx	Cost Exposure:	£	xxx,xxx,xxx
Comments: Relevant comments on the scenario.					

Conclusion:	
Should the outage(s) be allowed to proceed as planned?	Y/N
Justification: Provide supporting reasons for the decision on proceeding.	

Recommendation:	
On behalf of National Grid Electricity Transmission Limited, the <Sanction Authority> is invited to:	
APPROVE:	a forecast cost of £XXX to <manage the issue> .
ACKNOWLEDGE:	a cost exposure of £XXX if <a certain scenario occurs> .
<VERB>:	<other> [as appropriate].
Signed: Date:	
On behalf of <Transmission Owner> , the Head of is invited to:	
CONFIRM:	that the details in the background sections and the all outage bookings required for this work are included. Where appropriate, the Outage Change Costs Estimate are correct based on the best available information.
APPROVE:	the Outage Change Costs Pro-forma for the revised outage to be submitted to the System Operator in accordance with the NAP / STCP 11-3 (where appropriate).
Signed: Date:	